BEAR LAKE PROPEKTIES, LLC

3000 Village Run Road – Unit 103, Box 223 – Wexford, PA 15090-9244 Telephone: (724) 444-7501 Fax: (724) 444-7502

Director
Groundwater and Enforcement Branch (3WP22)
Office of Drinking Water & Source Water Protection
U.S. Environmental Protection Agency
Region III
1650 Arch St.
Philadelphia, Pa. 19103

December 12th, 2014

Subject: Submittal of EPA Form 7520-10; Bittinger #2 Well, Columbus Township, Warren County, Pa.

Director,

Please find enclosed the completed subject form, with the following attachments:

1.) Final Wellbore Schematic
2.) Description and Results of the Mechanical Integrity Test
3.) Description of the Stratigraphic Column indicating injection and confining zones
4.) Description of USDW in the area
5.) Compensated Density Sidewall Neutron Log and a Gamma Ray/Cement Bond/Variable Density Log

Please contact the undersigned with any questions.

Sincerely,
Bear Lake Properties, LLC

Karl C. Kimmich
President

* Attachments to this letter are in application folder + dated.

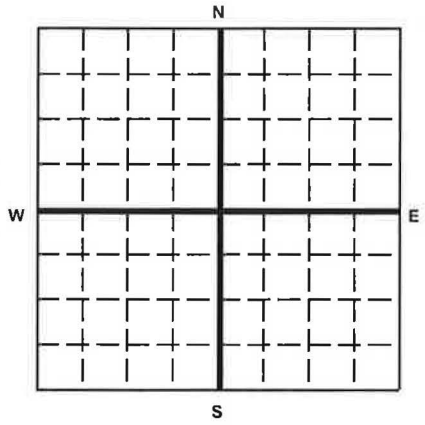
OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency
Washington, DC 20460

COMPLETION REPORT FOR BRINE DISPOSAL, HYDROCARBON STORAGE, OR ENHANCED RECOVERY

Name and Address of Existing Permittee	Name and Address of Surface Owner
Bear Lake Properties, LLC, 3000 Village Run Rd., Unit 103, #223 Wexford, Pa. 15090	Bear Lake Properties, LLC, 3000 Village Run Rd., Unit 103, #223, Wexford, Pa. 15090

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Pennsylvania	Warren	37-123-33944

Surface Location Description

___ 1/4 of ___ 1/4 of ___ 1/4 of ___ 1/4 of Section ___ Township ___ Range ___

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface LAT 41°, 59', 50.2", LONG -79°, 32', 7.5"

Location ___ ft. frm (N/S) ___ Line of quarter section

and ___ ft. from (E/W) ___ Line of quarter section.

WELL ACTIVITY	TYPE OF PERMIT	
☑ Brine Disposal	☑ Individual	Estimated Fracture Pressure of Injection Zone
☐ Enhanced Recovery	☐ Area	3911
☐ Hydrocarbon Storage	Number of Wells ___	

Anticipated Daily Injection Volume (Bbls)		Injection Interval	
Average	Maximum	Feet	to Feet
1000	2000	4246	4426

Anticipated Daily Injection Pressure (PSI)		Depth to Bottom of Lowermost Freshwater Formation (Feet)
Average	Maximum	
500	1651	250

Type of Injection Fluid *(Check the appropriate block(s))*

☑ Salt Water ☑ Brackish Water ☐ Fresh Water ☐ Liquid Hydrocarbon ☐ Other

Lease Name	Well Number
Bittinger	2

Name of Injection Zone: Medina/Whirlpool

Date Drilling Began	Date Well Completed	Permeability of Injection Zone
01/22/1984		100 md

Date Drilling Completed: 01/29/1984

Porosity of Injection Zone: 8%

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt/Ft - Grade - New or Used	Depth	Sacks	Class	Depth	Bit Diameter
8-5/8"	new	428	150	A	500 (est)	12-1/4"
4-1/2"	10.5# - J55 - new	4450'(est)	250 (est)	A	4574'	7-7/8"

INJECTION ZONE STIMULATION		WIRE LINE LOGS, LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals
4246'-4426'	N.A.	cement bond	0-3790'
		collar/gr	0-4380'
		dual laterolog	2586'-4574'
		density neutron	2588'-4586'

Complete Attachments A -- E listed on the reverse.

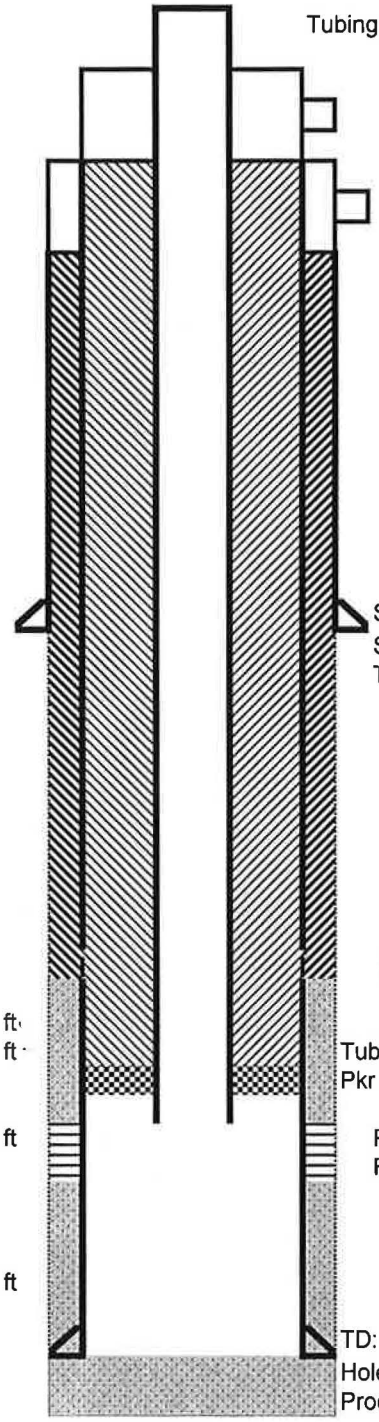
Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Karl C. Kimmich, President	Karl C. Kimmich	11/24/2014

EPA Form 7520-10 (Rev. 12-11)

Well Name: Bittinger #2
API Number: 37-123-33944
Location: Columbus Township, Warren County, Pa.



Tubing is monitored for injection pressure

Annular Space is monitored for pressure Changes

Positive pressure in annulus?

Annular Space is monitored for pressure Changes

Surface Casing: 8-5/8" 428 ft
Surface Cement: 150 sx.
TOC: surface

Casing Patch 3,160.5 ft
TOC: 3,190 ft

Top of Salt 3,618 ft
Bottom of Salt 3,816 ft

Tubing Size: 2-3/8"
Pkr Set Depth: 4,283 ft Baker A-34 Packer with tubing back off on top

Top of Medina 4,246 ft

Perforations: 4,286 - 4,426 ft
Re-Perf'd: 4,334 - 4,405 ft

Top of Queenston 4,427 ft

TD: 4,588 ft
Hole Size: 7-5/8"
Production Casing: 4-1/2", 4,450 ft

Date: 12/1/2014

U.S. EPA REGION III
MECHANICAL INTEGRITY TEST RESULT
PRESSURE TEST

COMPANY NAME	BEAR LAKE PROPERTIES
LEASE NAME	BITTINGER
FACILITY ID	PAS2D217BWAR
WELL NUMBER	BITTINGER #2 (37-165-33944)
DATE	DECEMBER 8, 2014
ANNULUS OR TUBING STRING TESTED	4½" x 2⅜"
DEPTH PACKER OR BRIDGE PLUG SET	4282'
TIME 11:18 **(BEGINNING)**	**TIME** 11:48 **(END)**

RECORDING DEVICE	GAUGE	CHART
INITIAL TEST PRESSURE	2000	1990
FINAL TEST PRESSURE	1991	1980

MULTIPLY THE INITIAL TEST PRESSURE BY .05 AND SUBTRACT FROM THE INITIAL TEST PRESSURE.

	INITIAL TEST PRESSURE	2000
-	**INITIAL TEST PRESSURE X .05**	- 100
	RESULT	= 1900

THE WELL PASSES MECHANICAL INTEGRITY IF THE FINAL TEST PRESSURE EXCEEDS THE RESULT CALCULATED ABOVE

TEST RESULT: **PASSED** ✓ **FAILED** _____

COMMENTS: 0 PSI ON 2⅜" TUBING DURING TEST

SIGNATURE OF COMPANY REPRESENTATIVE Joe Rojecki

SIGNATURE OF EPA REPRESENTATIVE Daly Rastad

Generalized Stratigraphic Column

Bittinger No 2

Warren County, PA

Age	Group	Formation	Predominant Rock Type	Total Depth to Base(Feet)	Thickness Feet	Confining Zone
Glacial Units				12	12	
Upper Devonian	Venango		Shale/sandstone	2807	2795	
Upper Devonian		Chadakoin	Shale			
Upper Devonian	Bradford		Shale			
Upper Devonian	Elk		Shale			
Upper Devonian		Java	Shale			
Upper Devonian		West Falls	Shale			
Upper Devonian		Sonyea	Shale			
Upper Devonian		Genesee	Shale			
Upper Devonian		Tully Limestone	Limestone	2915	108	
Upper Devonian	Hamilton	Mahantango	Shale, some sandstone	3084	169	
Upper Devonian	Hamilton	Marcellus Shale	Shale			
Middle Devonian		Onondaga	Limestone	3256	172	
Unconformity Interval				3270	14	
Upper Silurian		Salina - including Akron-Berite, Camillus, Syracuse, Vernon	Evaporites/Dolomite	3955	685	
Upper Silurian		Lockport Dolomite	Dolomite	4123	168	
Lower Silurian	Clinton	Rochester Shale, Irondequoit-Reynales Dolomite	Sandstone	4246	122	
Lower Silurian		Medina, inlcuding the Grimsby and Whirlpool Sandstones	Sandstone/Shale	4427	181	

Notes

= Black shading Indicates that this unit is considered to be a confining zone

= Diagonal shading Indicates that this unit is a confining unit that also contains producing zones within it

= No shading indicates that this unit is a producing zone and is not considered to be a confining unit

Section 4 - Underground Sources of Drinking Water (USDW) - Bittinger No. 2 /Columbus Township, Warren County, PA

The site lies within the Glaciated Plateau section of the Appalachian Plateaus Physiographic province. Both unconsolidated glacial units and bedrock are used for potable water. The uppermost unit at the site is mapped as Wisconsin age glacial kame deposits. Kame deposits consist primarily of sand and gravel interbedded with minor amounts of silt and clay (Pennsylvania Topographic and Geologic Survey, 1959). The well log for Bittinger No. 2 indicates that unconsolidated gravel is present from the surface to a depth of 12 feet below ground surface.

The uppermost bedrock beneath the site is mapped as the Devonian age Venango formation. The Venango formation consists of interbedded pebble conglomerate, crossbedded sandstone, siltstone, and shale. This unit is up to 330 feet thick in Venango County; however, only a portion of the unit is present in the site area. This unit is used as an aquifer throughout Warren County. The well log for Bittinger No. 2 indicates that Devonian age shale is present from 12 ft to a depth of 2,807 ft below ground surface. This is believed to include the Venango Formation, the Chadokoin formation, and the underlying Bradford Group. Wells deeper than approximately 100 feet deep usually encounter salt water, which is supported by the generally shallow well depths in Columbus Township. (PADER, 1982, US Geologic Survey, 2007)

The Devonian age Chadakoin formation underlies Venango formation and consists of fine-grained marine clastics (siltstone and shale) and includes a purplish pink sequence which is often used as a marker unit. This unit is up to 450 thick in Warren County.

The Pennsylvania Geologic Survey "Ground Water Inventory System" (GWIS) database was accessed to determine the sources of groundwater sources in the site area. This data base did not contain any groundwater wells within a one-quarter mile radius of Bittinger #2 well. Although there are no wells listed, the well reporting requirement was established in 1968 is not considered to be a complete record of water wells and other wells may be present. (Pennsylvania Topographic and Geologic Survey, September 15, 2010). (As discussed in the previous section on the AOR, a survey conducted by foot within the ¼ mile AOR also did not identify any water wells.)

The New York Department of Environmental Conservation (DEC) "Water Well Program Information Search Wizard" website was utilized to determine if there were any water wells in New York State within the ¼ mile AOR of the Bittinger #2 well. No water wells were identified within the AOR of the Bittinger #2 well.

Based on the available information, the glacial units and the top 100 feet of bedrock is considered the underground sources of drinking water in the site area. The well logs indicate that the glacial material is approximately 15 feet thick beneath the site. Freshwater is expected to be encountered to a depth of approximately 100 feet with increasing salinity beyond that depth. The Bittinger No. 2 well has 8 5/8 inch surface casing cemented to a depth of 428 feet below ground surface, providing a buffer of approximately 300 feet beyond the base of the underground sources of drinking water based on the well data in Columbus Township (maximum well depth of 130 feet) and the references indicating brine being encountered at depths over 100 feet within the bedrock units. In addition, production casing extends several thousands of feet below the

drinking water source and is cemented approximately 1000 feet above the injection interval. (Injection well construction is described in detail in the "Well Construction" section.)

In calculating the depth to the base of the lowermost USDW, the depth of the deepest well in the area 130 feet (it is believed that the generally shallow well depth in the area was related to water quality issues based on the available literature) was doubled and rounded upward to the nearest 100 feet, providing a conservative maximum depth estimate of the underground source of drinking water of 300 feet.

References:

New York Department of Environmental Conservation website "DEC Water Well Program Information Search Wizard": http://www.dec.ny.gov/lands/33317.html

Pennsylvania Topographic and Geologic Survey, 1959. " Glacial Geology of Northwestern, PA." Bulletin G 32.

Pennsylvania Topographic and Geologic Survey, 1981. " Atlas of Preliminary Quadrangle Maps of Pennsylvania, PA." Map 61.

PADER, 1982. "Engineering Characteristics of the Rocks of Pennsylvania". Environmental Geology Report 1.

Pennsylvania Topographic and Geologic Survey, September 15/20, 2010. "Ground Water Inventory System". www.dcnr.state.pa.us/topogeo/groundwater/PAGWIS

US Geologic Survey, 2007. "Ground-Water Resources and the Hydrologic Effects of Petroleum Occurrence and Development, Warren County, Northwestern Pennsylvania." Scientific Investigations Report 2006-5263.

UNDERGROUND SOURCES OF DRINKING WATER

BEDROCK MAP

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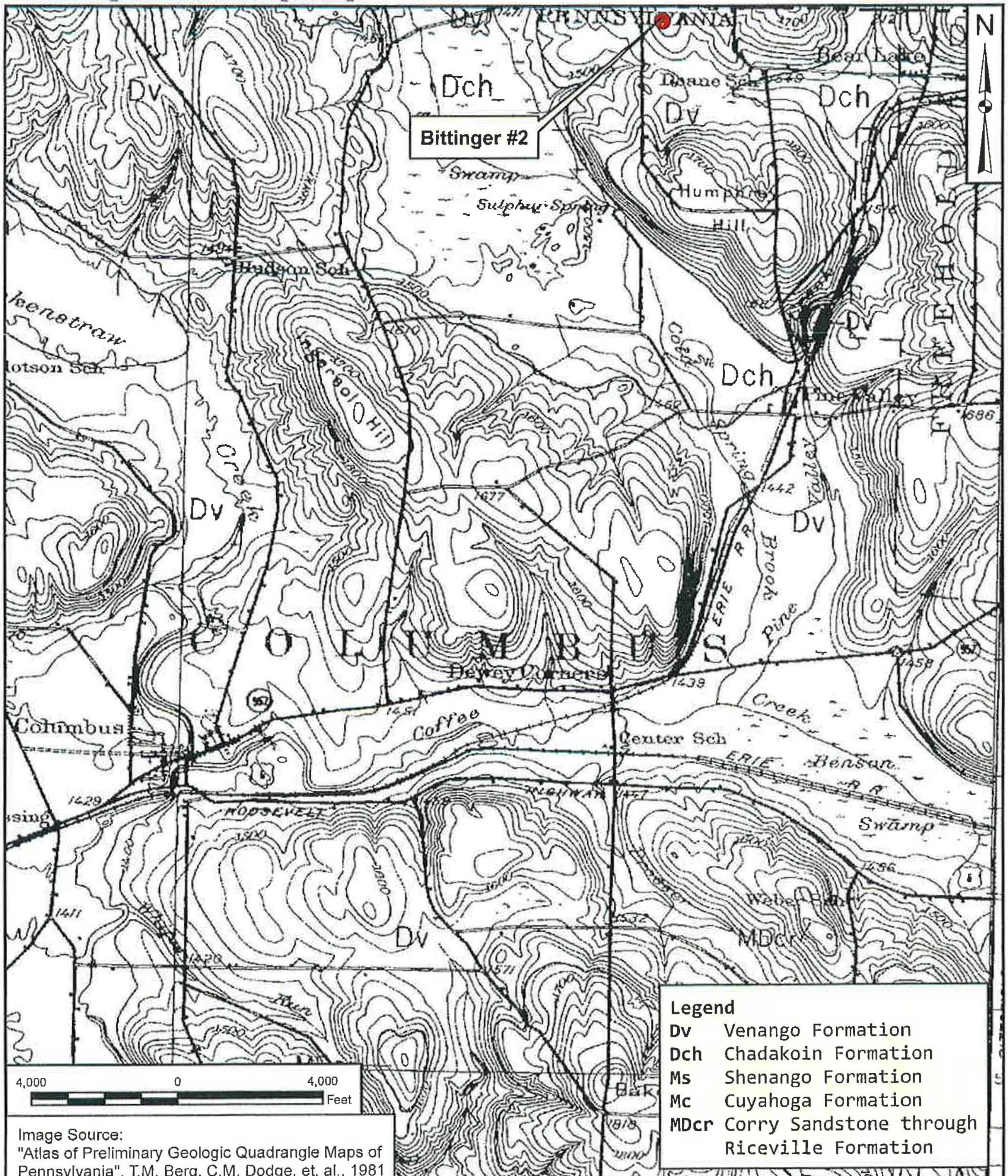

Image Source:
"Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania", T,M, Berg, C.M. Dodge, et. al., 1981

TETRA TECH

BEDROCK MAP
BITTINGER #2 WELL
BEAR LAKE PROPERTIES, LLC
WARREN COUNTY, PENNSYLVANIA

DRAWN BY: J. NOVAK 06/19/12
CHECKED BY: E. BERKLITE 06/19/12
APPROVED BY:

CONTRACT NUMBER: 112C04311
CTO xxxx

FIGURE NUMBER	REV
FIGURE NO.	0

UNDERGROUND SOURCES OF DRINKING WATER

GLACIAL MAP

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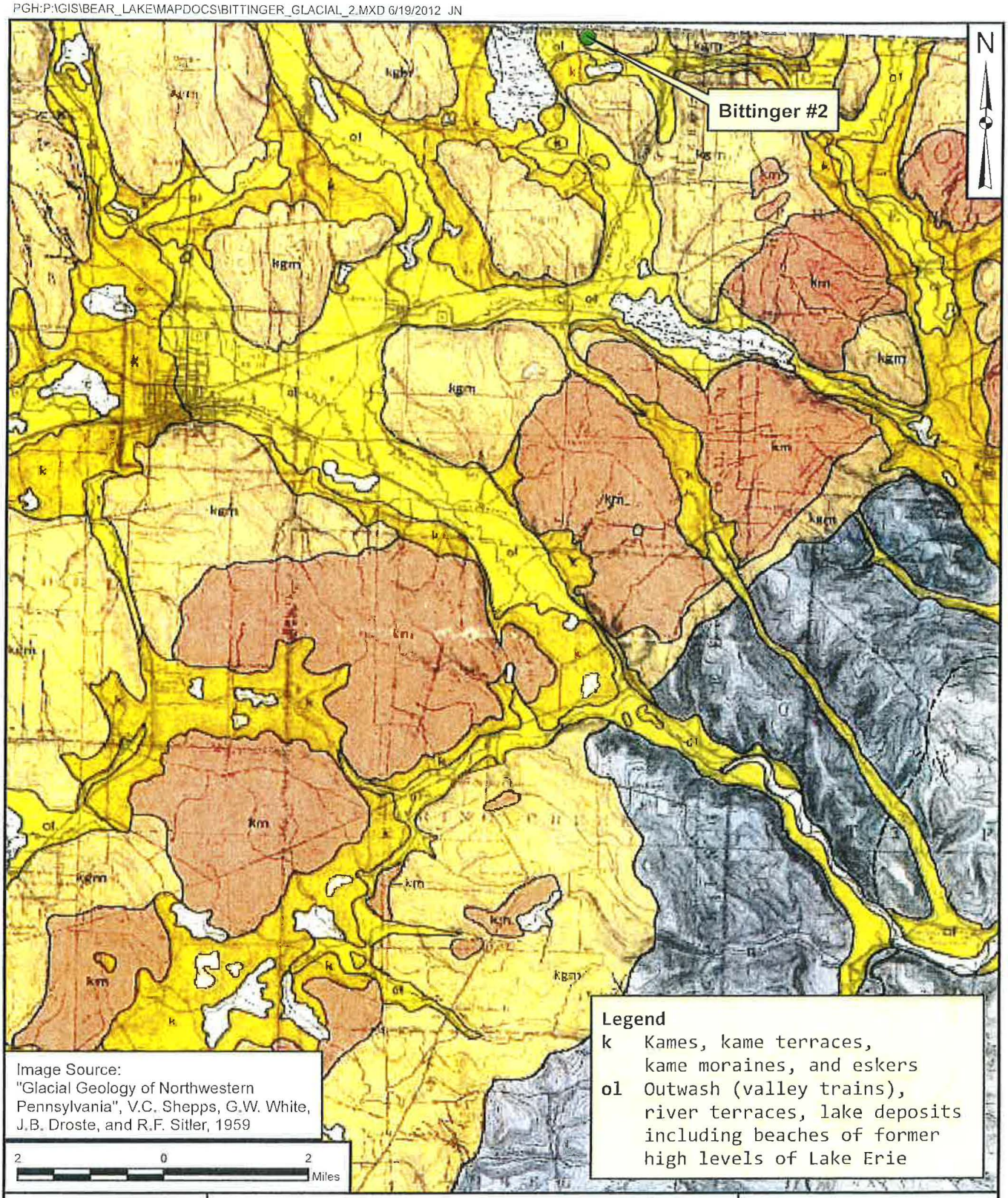

TETRA TECH

GLACIAL MAP
BITTINGER #2 WELL
BEAR LAKE PROPERTIES, LLC
WARREN COUNTY, PENNSYLVANIA

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